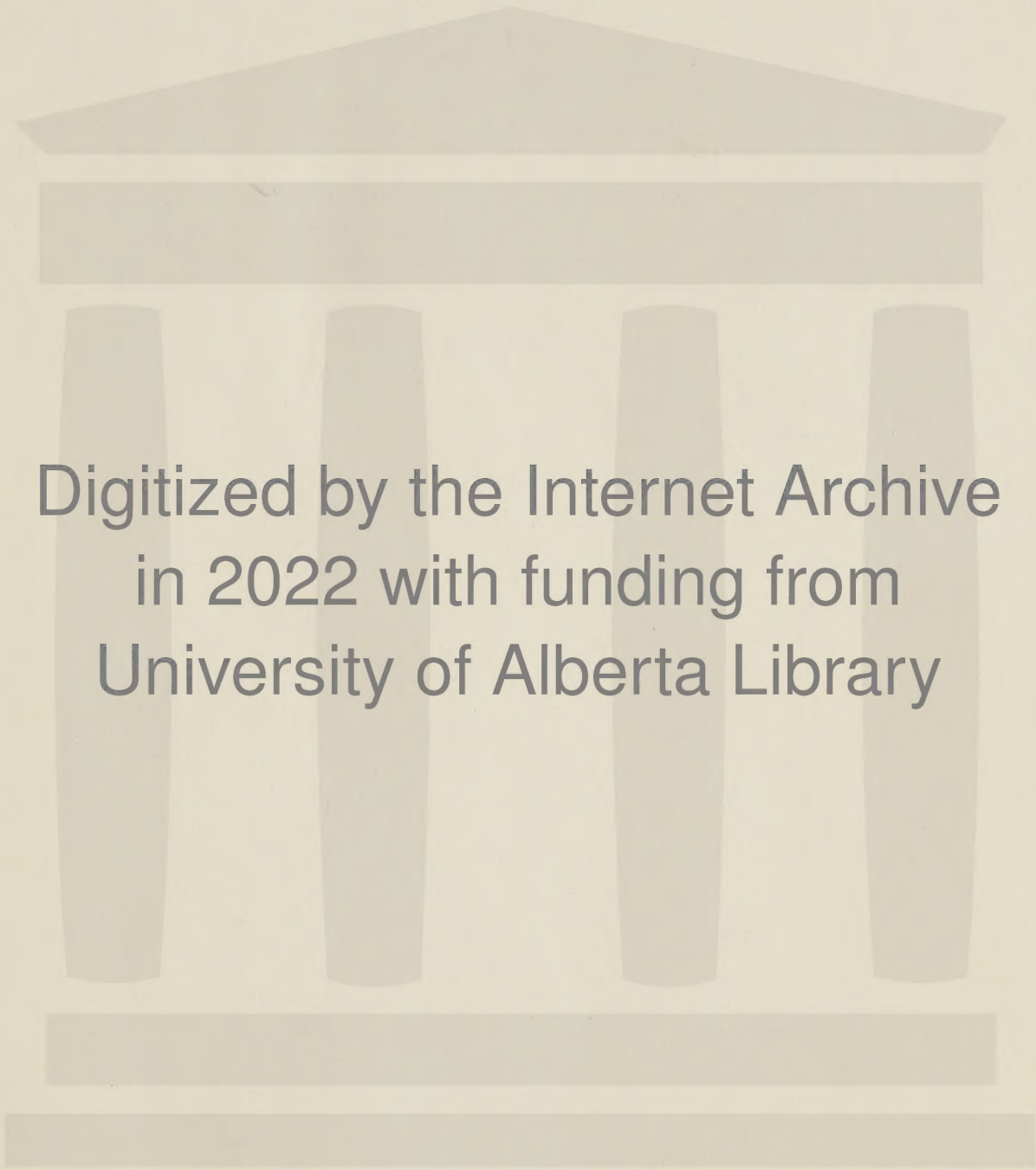

THE UNIVERSITY OF ALBERTA

THE EFFECTS OF MODIFIED AND MORE CONVENTIONAL HOCKEY ENVIRONMENTS ON BOYS' SKILL DEVELOPMENT

by

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A THESIS

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ABSTRACT

It was the purpose of this study to determine if, by modifying (scaling down) the hockey environment for boys, seven and eight year olds would improve to a greater or lesser degree than would other boys playing a more conventional style game.

Following pre-testing and random assignment to teams, 28 boys played a full season under a modified system and 58 boys played under a conventional system. At the completion of the season (23 games) a post-test was conducted to measure improvement in two skills - forward skating and puck handling.

A standard t-test was applied to the results and all hypotheses were stated in null form. Statistical analysis revealed that there was no significant difference in mean score improvements between the two groups.

In addition the study concludes, from the experience of actually implementing a modified environment, that such modifications can be implemented easily. Based on a thorough review of literature and other factors, it concludes that a modified environment could be usefully instituted for childrens' hockey.

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

The sport of ice hockey is to Canada what soccer-football is to Britain, what baseball and basketball are to the United States, what tennis is to Australia, what table tennis is to the Chinese and what volleyball is to Japan. For Canadians it is synonymous with the word "sport". Canadians invented hockey and it is now played around the world.

Tom Watt, one of Canada's leading university coaches, explains the importance of hockey this way:

> Hockey is Canada's culture...Hockey has more active participants than all other Canadian sports together.
>
> Abroad, we Canadians are not thought of in terms of art, music, dance, or literature. But hockey and Canada are thought to be one. It is our life. It is our culture. (Watt, 1973, p.1)

Many authors concur but perhaps Bruce Kidd, a leading sports critic, and co-author John Macfarlane say it best in their book The Death of Hockey:

> Hockey is the Canadian metaphor, the rink a symbol of this country's vast stretches of water and wilderness, its extremes of climate, the player a symbol of our struggle to civilize such a land. Some people call it our national religion. (Kidd and Macfarlane, 1972, p.4)

No event in sports history has captured the attention of all Canadians as did the 1972 Canada-Russia hockey series. Its importance was illustrated by Jock Carroll who said,

> "Canada had almost stopped breathing. Children had been let out of school to watch the sattelite television picture. Thousands had brought TV or radio sets into offices and factories or simply left work. An estimated 12 million Canadians were watching the game." [the final game, September 28, 1972] (Carroll, 1973, p.26)

While the outcome of this historic best of seven game series was slightly in Canada's favour, it has caused Canadians everywhere, and especially hockey personnel, to ask the question, "What has happened to 'our' (Canada's) role as the best in the world?" No longer is it accepted that Canada is the strongest nation at her own sport, and Canadians are beginning to ask why.

Many aspects of hockey are now being examined: from training techniques of the professionals to the role of the minor programs which continue to make hockey Canada's most participated-in sport. The near-loss of Team Canada to the Russians was a rude awakening for most Canadians, but many hockey experts have been predicting Canada's downfall for years.

The critics have said that Canadians do not know their game well enough. Research and literature on hockey has been scarce, and most of what is available relates to homespun stories about professional stars. There have been many answers suggested, but most critics would agree that

there is a need to "begin a comprehensive and deliberate plan to study the sport in detail, and then make the necessary applications in order to develop and promote our most important athletic event." (DeStefano, 1971, p.19)

Purpose of the Study

The purpose of this study was to examine the relative effects on young boys (aged seven and eight) of playing hockey under modified and more conventional conditions for a full season (23 games).

The following sub-problems were also explored:

(1) to provide a critical analysis of the existing game structure for minor hockey in Canada;

(2) to determine whether or not an alternate game model can or should be implemented in a community minor hockey program;

(3) to determine if skill improvement for these boys varies, depending on the environment (ice and team size).

Need for the Study

Given the relative dearth of analytical studies with regard to children's hockey environments, it was felt that this study could make both theoretical and practical contributions. As the review of literature in this study suggests, a very limited body of knowledge exists on the conceptual and analytical aspects of children's hockey.

It was therefore hoped that this study would contribute to the development of this theoretical understanding and analysis of hockey's environment.

A second, and perhaps more immediate need to which the study contributed, relates to the practical modification of the game environment to bring it more in line with the generally accepted objectives of minor hockey.

A third area of potential contribution was to that of evaluative research. Development of techniques for objectively assessing the game environment outcomes was felt to be of both theoretical and practical significance.

Definition of Terms

More Conventional Game/Environment - A term used to describe a condition under which part of this study was done. Distinguishing features include: an ice surface 120 feet by 65 feet, teams composed of 15-17 players, and an assigned coach. (NOTE - a truly conventional hockey game/environment features an ice surface 185 feet by 85 feet, however, utilization of such a surface for this study was impossible due to factors explained in the third chapter. Therefore this study's "conventional" environment actually contains elements of a "modified" environment.)

Modified Game/Environment - A term generally used to refer to a game model differing from the conventional. Specifically for this study its distinguishing features include an ice surface 65 feet by 85 feet, teams composed

of seven players, and no assigned coach, only a supervisor/ game director.

Forward Skating Test - A hockey skill test, designed and validated by Merriweather and Walford (1971, p.146), which requires a subject to skate 120 feet in a forward direction while being timed.

Puckhandling Test - A hockey skill test, designed and validated by Merriweather and Walford (1971, p.146), which requires a subject to skate and carry a puck (pushing it along the ice with his stick) on a pre-determined course around several obstacles while being timed.

Format of Thesis

This thesis will generally follow the traditional format. The second chapter (review of literature) will critically assess the role of sport in the lives of young children and the state of minor hockey in Canada. This is in keeping with the first purpose (see above) of the study. An alternate model will then be proposed and rationalized by a thorough review of related literature.

The third chapter explains the methods and procedures used in implementing an alternate model for this study.

The fourth chapter includes a detailed analysis of results and a discussion of their meanings.

Chapter five summarizes, offers conclusions, and makes recommendations for further study.

CHAPTER II

CHILDREN'S HOCKEY ENVIRONMENT IN CANADA

Introduction

In this chapter the relevant literature related to sport and the young athlete, and, more specifically, the status of minor hockey in Canada will be critically reviewed. A common thread will be the analysis of critical comment by various authors on the role of sport (and hockey in particular) in a child's development, and the extent to which these authors feel the Canadian minor hockey system is meeting the needs of its young participants.

It will become obvious that the present system is, indeed, judged to be inadequate in meeting children's physical and psychological needs. Therefore an alternate environment will be presented and rationalized based on a further review of related literature.

Sport and Young Athletes

With more and more free time available for recreational experiences and an increasing educational emphasis on the "total" development of the individual, interest and participation in sports activities seems to be at an unparalleled height of popularity. This is especially true of the pre-teenage youngster.

With this increase in participation, there has been an increase in criticism of what might be called "organized minor sport programs". Those who find fault often claim that, in too many cases, the play needs of youngsters are not being met by organized sport. "But why do children play?" one might ask.

Young boys and girls have been playing games for centuries and there have been a number of theories proposed as to why children play. "Man plays for many reasons, and he plays for no reason at all." (Harper and Kretchman, 1969, p.57) Among the theories of play have been those of

> Spencer (play is needed to discharge surplus energy); Tarde (play is limitation); Lazarus (play is a recreative means of recovery from fatigue); Groos (play is preparation for adult life); Appleton (play is associated with bodily changes occurring during growth); Hall (play is recapitulation - a rehearsing of ancestoral activities); Shand (play is an expression of joy); McDougall (play is motivated by instinctive rivalry); Adler (play is used to overcome inferiority complexes); Huizinga (play is totality, an end in and of itself)." (Miller and Russell, 1971, p.1)

It would appear then that no single reason can be put forward as an explanation of why children play or take part in organized sport. In short, children play for many, many reasons. Many adults and coaches assume youngsters who play wish to become good athletes, but Paul Weiss, in his book Sport: A Philosophic Inquiry, points out that "though all children seem to play, not all want to turn themselves into athletes." (Weiss, 1969, p.24)

Typically, today's minor sport programs are conceived by adults to help youngsters get more enjoyment out of the games they play. It usually starts in a community with teams and leagues formed to provide competition on a regular basis. But soon it becomes more complicated. There are uniforms to buy, facilities to prepare, schedules to draw up, registrations to submit, officials to obtain, money to raise, coaches to get, players to cut, playoffs to play and so on. Such details frequently result in the organization temporarily forgetting what the major purpose of the sport is or was. To each person involved it has a different connotation.

Murray Smith, a noted Canadian physical educator, has said that "If we once understood what sport was, and what it meant to people, I don't think we do any longer. The word sport....is almost beyond definition." (Smith, 1971, p.1)

Smith cites several reasons for the changes that have taken place in sport, especially in sport for youngsters, and one of his criticisms is of the adults who no longer "help where they can" but who clearly dominate minor sport. Sports writer Rich Vivone agrees when he says

> Adults have a delightful way of managing to louse up a kid's world because they are forever managing to put in rules and techniques (now this is the way we did it!) which had no place being there. (Vivone, 1970)

While Vivone recognizes that adults "just want to help", he feels many are doing more harm than good. Everett Shostrum, in his book Man The Manipulator, offers an opinion as to why adults seem to want to become involved:

> The manipulative parent [read: coach] sees his job in life as one of controlling the outward behavior of his children. He has a strong sense of responsibility for them and this frequently develops into feelings of omnipotence. He plays Judge and God. (Shostrum, 1967, p.81)

Educators, too, see that children are being brought up in an adult dominated world, a situation which is criticized by many. Dr. James Hymes of the University of Maryland Childhood Education Department points to this fact when he says

> I think I would have to say that almost no one seems to be thinking about children... We are thinking about what these children will someday become...We really like children best only when they stop being children and become like us, adults... (LeShan, 1967, p.5)

As one can see, the influence of adults on children's play is a serious matter. Often adults are judged to have had a negative influence which causes many physical educators, parents and writers to suggest that aims, structures, rules and facilities should be changed. Physical educator and philosopher Earle Zeigler made an understatement when he said

> Competitive sports for boys and girls are desirable at some stage of their development. The extent of involvement, the

> intensity of the actual experience, and the role of the adults and coaches are aspects which need further clarification. (Zeigler, 1969, p.11)

In a unique study of participants and non-participants in minor sport, T. D. Orlick concluded that, in many cases, "organized sport appears to operate as an extremely efficient screening process for the elimination of children" (Orlick, 1973, p.12). Following interviews with the youngsters and their parents he reported a number of pertinent comments. For example,

> ...it was found that over 80 per cent of the mothers interviewed expressed a strong dislike for the winning emphasis, the pressure, and the competitiveness in children's sports. They indicated they would like to see these things de-emphasized and the emphasis put on fun and enjoyment, along with giving each child an equal opportunity to play. (Orlick, 1973, p.12)

In Life magazine (December 29, 1972, p.87) editors told of receiving 250,000 letters from children who are discontented with their world. Among the replies was this one from a 12 year old: "Too often adults don't listen to us because they feel we can't really have opinions."

Comments such as those Orlick heard are appropriate in this context:

> In general the children expressed a desire to have the entire game scaled down so that they could have more fun and experience more successes (as opposed to failure). They also had some specific suggestions for improving several sports. Those pertaining to baseball and hockey follow. Many children felt that baseball should be changed so they could hit

> the ball more often (at bat) and get the ball more often in the field. Some specific suggestions for accomplishing this included making the field smaller, the bases shorter, the bats bigger, allowing more swings at the ball and more outs to retire a side. In hockey, children indicated that they did not like being pushed around, checked, boarded, and getting cold. They would like to learn to skate better, to get the puck more often, and do more playing and less sitting around "freezing".
>
> By implementing some of the children's suggestions, it would appear that many positive adjustments could be made in children's sports. For example, by scaling down the games, children will have a greater chance of attaining some success and will conceivably have a more enjoyable experience. (Orlick, 1973, p.13)

It would appear that the adults who organize minor sport are under the impression that all youngsters are interested in what Keating calls "athletics". He points out (Miller and Russell, 1971, p.175) that there is a difference between the terms "sport" and "athletics", and that failing to make this differentiation can cause a great deal of confusion. Sport "is a kind of diversion...for fun, pleasure, delight...dominated by a spirit of moderation and generosity." Athletics, on the other hand, is "a competitive activity...for victory...characterized by a spirit of dedication, sacrifice and intensity." If a coach feels minor hockey falls under the definition of "athletics" and the participants consider it a "sport", problems are bound to arise, and invariably it is the participant who has to change his thinking or else drop out.

In summary then, it appears that critics of minor sport feel it does accomplish many worthwhile goals, but that it could do a great deal more for children if it were not so adult-oriented and controlled. Today's minor sport programs, including hockey, should stress the fact that its participants are not adults, should not be treated like adults, should not be asked to play under adult rules or on adult facilities, and finally, that the games should be a positive experience for every participant.

Minor Hockey in Canada

In 1977-78 the Canadian Amateur Hockey Association and its eleven branches registered a total of 567,511 hockey players of whom 245,612 were classified as "pee-wee" or below (i.e. under 12 years of age on January 1, 1978). With such a registration, the CAHA is the largest sport governing body in Canada. Decisions made by this body have a profound effect on hockey, even to the point that the Canadian government sometimes has little influence.

One of the aspects of the game over which they have complete control is in the playing rules to be used by registered teams. The CAHA's standing committee on rules has not, to this point, recommended that children have standard playing rules which differ from the adult rules. While the national committee does not recognize or promote any rule differences for youngsters, the CAHA does permit

local associations to alter the rules with approval from the provincial organization. (Juckes, 1973)

Some local associations have adopted a revised game for their minor leagues, and there is a greater trend in that direction. Aspen Gardens, a small community within the city of Edmonton, is one of the associations in Canada to have changed the rules of the game to suit the young participant. (Jones, 1973)

Fredericton, New Brunswick is another. A special report to City Council in 1974 recommended, among many things, that a "beginner's program" replace the more traditional one for 7-8 year olds. As a result the city now had a program which emphasizes "fun and skill development" through an unstructured, after school situation stressing skating and play with the puck.

For 9-10 year olds the program includes play on one half ice, smaller goals, fewer players per team (maximum 12) and rotation of positions.

However, because most community associations are involved in some form of inter-community play, which falls under the jurisdiction of the provincial association, regulation CAHA rules must be followed. The CAHA reports (Juckes, 1973) that it sees no need to revise the current rules to suit the needs and abilities of its younger participants.

However, hockey goes far beyond the CAHA or any of its branches. It includes school-boy, university, college, professional, church, armed forces and commercial hockey. And, as in days gone by, hockey is still played on ponds, rivers and outdoor rinks.

For the youngsters playing hockey across Canada, it "is a game that has captured their imaginations and will probably hold their interest for life". (Conacher, 1970, p.1) Writing from a personal standpoint, Bruce Kidd and John Macfarlane agree when they say

> Hockey is something most of us share almost from birth. From the frost of October to the thaws of April... boys learn to skate propped up by hockey sticks...The game is a national puberty rite, performed by wobbly-legged kids for congregations of rink-side parents." (Kidd and Macfarlane, 1972, p.5)

A sport, and those who organize it, has the potential to provide a highly worthwhile experience for its participants. For example, a sport like hockey can provide an opportunity to become physically fit, learn sportsmanship, meet and get along with new people, compete against equals, and many other highly desirable experiences. But does it?

A question so open-ended is difficult to answer, but if one can judge by the number of negative comments in books, magazines and newspapers, it cannot be assumed that hockey (at least at the minor level) is meeting with the approval of all concerned. A number of reasons are being

suggested as to why this is so, and some will be explored below.

Probably the most frequent criticisms of our minor hockey programs are summarized in an article for the United Church Observer, a national magazine. Among other things, writer James A. Taylor stated:

> (critics) challenge organized hockey as a whole. They charge:
> - that coaches aren't teaching children to play good hockey; they're teaching them to win games by any means.
> - that children are being exploited by coaches and parents to satisfy their own egos, ignoring the child's own development.
> - that hockey is interfering with education: some teams play as many games in a season as a professional NHL team.
> - that the televised NHL style of play is being copied by children who are not ready to handle it yet.
> - that organized hockey for boys is a thinly disguised means of producing professional league players.
> (Taylor, 1969, p.12)

Naturally, such statements cannot be generalized to the point that every player is subjected to such experiences. However most would agree that, while organized hockey as a whole is a good thing, there are some serious abuses which need not be part of a hockey experience.

Murray Smith puts the blame squarely on the shoulders of hockey's adult organizers who often forget "that kid's sport is for kids". He goes on to illustrate his point:

> It is now common to find organized hockey for boys of five and six years of age. To the parents of boys selected this is often considered cute and a great start in hockey. These boys would be far better off learning to skate and handle a stick. The last thing they need is organized hockey. It is even more unsuitable for the large number of five and six year olds who are informed at the first or second practice that they "aren't good enough to make the team". (Smith, 1971, p.8)

Many of hockey's critics say that professionalism and the influence, subtle or otherwise, of the National Hockey League is causing the demise of hockey for our youngsters. "The example of professional hockey has poisoned the game", say Bruce Kidd and John Macfarlane (1972, p.20). They go on to point out that "Unfortunately, the NHL sets the style for all hockey in Canada." (1972, p.43)

The NHL influence is greater than over the style of play. Its tangible power over the youngsters themselves is a major consideration. As Howell and Howell point out "The aspiration is generally toward professionalism among the youth...Playing conditions are professionally dominated... Many people are critical of professionalism's intrusion in amateur hockey." (Howell and Howell, 1969, p.216)

What does professionalism mean to the game itself and what effect does it have on the players? Sociologist Harry Webb explains that as games become more formal there is a

> ...change in attitude, one progressing from an emphasis on fairness to one on skill...The notion of fairness stands paramount in the child's approach to play. For this reason he needs few rules, often making them up as he proceeds, and no referees; he is capable, given his fairness, of enforcing them himself.

As he meets more competitive situations in the fifth or sixth grade (aged 10-12), there is a

> ...transition from child's play to games and then to sport (which) involves increasing complexity and rationalization of the activities and increasing professionalism of attitudes. By "professionalism" of course is meant the substitution of skill for fairness as the paramount factor in play activity and the increasing importance of victory. (Webb, 1969, p.163)

In an age when education is so important, Brian Conacher claims that hockey will continue to lose participants unless it provides the opportunity for a young boy to continue his schooling and play hockey at the same time. Again, he casts the blame on the professional influence:

> The present professional hockey system is in conflict with its most vital component - its source of supply. As long as the out-dated professional system is out of step with the educational desires of its prospective and active players, it will continue to lose more young men at a time when the supply has already become dangerously low... (Conacher, 1970, introduction)

As far back as 1952, the professional influence and lack of amateur leadership was being criticized:

> I do, however, look both sorrowfully and resentfully at the over-complacent officers of Canada's amateur hockey bodies. Accepting orders from the NHL, they have allowed our

> nation's youth to be deprived of a game that was once featured by skillful, heady and pretty combination play, well-mixed with very hard but clean bodily contact as the main ingredients. Unfortunately, the style of play and the ice-conduct of big-name pros... set the standard which youngsters across Canada, who are forced to use the pro rules, are almost certain to copy. This includes the too-frequent brawls and fights. (Roche, 1952, p.299)

Without professional influence hockey certainly would not be as popular as it is today. And there are many positive aspects to having our youngsters exposed to professional hockey, but "although professional sport is a highly entertaining and successful enterprise it does not constitute an appropriate model for the play and games of youngsters." (Botterill, 1972, p.3)

In 1971 a committee appointed by the federal government to study a number of previous reports on hockey stated:

> One of the real hockey tragedies in Canada is the fact that these 225,000 boys must play in an Association (the CAHA) which is operated by a few executives who exercise complete powers and whose attentions are directed primarily at junior hockey (due to NHL influence). (Department of National Health and Welfare, 1971, p.16)

A 1967 national hockey study committee expressed similar feelings and suggested that a sports governing body must be independant and think accordingly. In its report were a number of pertinent observations including this one:

> If any organization is to operate independently, it must enjoy control over its own procedures. For a sports governing body, this means it must be able to determine the

> eligibility of its own members, the playing rules of its competitions and it must be free to determine how to spend its own funds. The Canadian Amateur Hockey Association enjoys fully none of these essential rights. (Department of National Health and Welfare, 1967, p.32)

Both national committees centered their comments on organizational, constitutional and legal influences of the NHL over the CAHA and on hockey in Canada. However, a provincial hockey committee named by the Province of Alberta has made several notable comments relative to the status of hockey in general; for example:

> There are a few organizations using modified rules for various age groups, but little consideration has been given to the fact that a game designed for a mature person may not be suited to a 10 year old. There appears to be little interest in changing any rules. (p.27)
>
> Almost all rinks are organized and supervised to the extent that informal play or "shinny" is not possible. (p.28)
>
> Over-organization, over-specialization, over-coaching, to the point of giving too much too soon, has left some boys with nothing to look forward to, and has encouraged early drop-outs. (p.34)

The New Brunswick Hockey Study Report of 1976 makes the point that

> ...far too often the "professional game" is being used as the only model for minor hockey. This is only natural...but it does not make it right. Those organizing, coaching and officiating in minor hockey must realize that ice size, rule interpretations, strategies, drills, schedules and coaching techniques should not be a carbon copy of the professional or adult model.

Like the Fredericton report, it too recommends a reduction in the ice size and number of players for younger age groups.

Comments and criticisms such as those above are not uncommon today. It is only natural that hockey, as Canada's largest and most popular sport, would be in line for criticism of this nature. Much of it is constructive and should be of interest to hockey officials, but, if a comment by the national Task Force on Sports For Canadians has any validity, things will be a long time in changing. The report stated:

> It is not surprising that a sport so much played by boys across the country should be eliciting so much critical comment. What has surprised us is the unwillingness or hesitation of officials in both amateur and professional hockey to take either the emerging criticism or the present problems with candid openness and seriousness. Too often the attitude seems to be that "this is our bailiwick and the critics don't know what they're talking about". (Task Force Report, 1969, p.27)

It is an easy thing to criticize something, but it is quite another matter to suggest alternatives. However, in recent years many of hockey's critics have been people who are involved in the game and are aware of its problems. Naturally, there are as many suggestions for change as there are critics. A few of their ideas are outlined below.

Over-organization and over-emphasis seem to be the main targets of criticism, and therefore, most comments relate to these two areas.

Paul Arsenault, one of Canada's top university coaches, states

> ...The majority of kids...will learn more from playing shinny hockey...Up to age 11 or 12. Kids should not have to worry about positions or line changes or schedules or leagues. Just give them an hour on the ice and let them play for the entire period, non-stop. (Williams, 1976, p.30)

Vince Leah, writing in MacLean's Magazine, offers the suggestion that we should be looking to the past for the answer to our hockey problems. He makes the obvious, but sometimes overlooked, statement that: "Boys are more important than the game they play." In a nostalgic look at how hockey got to where it is today, he argues that the old days were not so bad.

> There wasn't much coaching in a technical sense in those days, but often two dozen or more boys were on the ice at once and I think in that crowd, most of them learned something about skating and keeping the puck. (Leah, 1964, p.62)

Some critics, such as W. J. L'Heureux of the University of Western Ontario, say that the rules under which our boys play should be changed. He comments:

> The major problem is that Canadians now learn the game under NHL rules...We should let the younger boys learn under international rules if we want them really to play hockey - but we can't because the NHL sets the rules." (Kidd and Macfarlane, 1972, p.66)

Both Tom Watt, University of Toronto hockey coach, and Harold Hansen of the University of Ottawa, feel that boys should play fewer games and concentrate more on learning the fundamentals of the game. Says Watt:

> Let's practice more with youngsters and play fewer gamejs. We didn't learn mathematics by constantly being confronted with problems. Rather we were given fundamentals in arithmetic, addition, multiplication, etc. and then asked to solve the problem. Let's give our youngsters more fundamentals and less games - or problems. Russian youth observed in Moscow were learning fundamentals and playing only informally until they reached the age of 12. (Watt, 1973, p.2)

Hansen points out that a survey of Toronto minor hockey showed that an average player spent approximately ten minutes on the ice per week (1971, p.3), and suggests that younger boys should practice for two hours per week (allowing him two full hours of ice time) instead of playing games. Williams (1976) adds credibility to this when he points out that a 60-minute game allows each player an average of nine minutes on the ice and a total of 30 seconds in control of the puck.

Both Watt and Murray Smith point to over-emphasis of a single sport as being detrimental to the growth of hockey. Watt suggests (1973, p.3) that parents not over-emphasize hockey to the point of excluding other Canadian sports, such as rugby, lacrosse, soccer and baseball. Smith says

> Personally, I believe that one of the first duties of parents, teachers and coaches is to see that each child gets exposure to a relatively wide range of different kinds of activities. When this happens, it is almost inevitable that he will select one or more that he distinctly prefers...Many of the problems of getting children to attend practices and put out a good effort...stem from the fact that the child has been pushed into the sport... (Smith, 1971, p.7)

With over-emphasis such as we now see, Kidd and Mcfarlane (1972, p.68) point out that "Ice time is scarce and, the purpose of amateur hockey being to develop players for the NHL, what little there is of it is hoarded for boys with the most talent." They go on to cite various reasons for the high drop-out rate of participants and conclude by saying "The kids play the game for a few years as a ritual, and then happily quit."

A number of writers and critics agree that youngsters should continue to play the game (because they have more fun than in just practicing), but that modifications should be made to take into account their lack of size, their need for ice-time and so on. As Hansen says

> Children learn at a rate convenient to their own development and they cannot be forced into situations that will lead to frustration because of the complex nature of the skill of the game...A basic principle to be followed is that games are modified to accommodate the ability of the child, as well as to provide a learning situation for the child...

More specifically, he suggests minor sport organizations should

> ...look to further modifications of field sizes, rink sizes, court sizes, as well as rule changes - all of which are designed to suit the characteristics of youth, to develop fundamental skills to a greater extent and to create greater interest in the values of the game rather than the score results of the game. (1973, p.31)

Botterill goes even further in suggesting modifications when he says

> ...scaled down versions of the game of hockey are important at all the lower levels. Increasing the opportunity for success (by making the goals bigger, making shorter games, using lighter pucks, creating different ways to achieve, etc.) can play a crucial part in creating more positive early sports experiences...Cross ice games to provide more ice-time for kids and make maximum use of facilities, are excellent improvisations for youngsters' early years in hockey. (Botterill, 1972, p.120)

Smith states that children are not miniature adults and therefore should not be treated as such, and that the application of adult ideas to minor sports often is ridiculous. For example, he says

> It is ludicrous to put pre-school or even early elementary school children on a full sheet of ice and expect them to play under udult rules. Such youngsters should spend their time skating, handling the puck and shooting in what can best be described as hockey-type activities. (Smith, 1971, p.9)

Not only do physical educators and coaches such as those mentioned above have ideas which would change the game, but also youngsters themselves are capable of expressing intelligent opinions. Boys involved in Orlick's study

(1972) indicated very clearly that they did not enjoy playing in sports under adult-like conditions. They suggested making rinks smaller, changing some rules, eliminating the more violent aspects of the game, and making sure everyone gets an equal chance to participate.

In Coquitlam, B. C. a group of 12 and 13 year-old boys, operating on their own initiative, started a "Moonlight Hockey League" where the boys' hockey experience is described as "much more fun" than normal minor hockey games. Players in this league play at 4:00 a.m. twice or more per month. They play without coaches or linesmen although an adult usually supervises and referees. One player explains the rules this way: "We agreed to have no body checking, no fighting and to use a foam rubber puck so no one would get hurt." Another adds that "In the regular games you're off the ice at least half the time, but you play the full two hours here...And here you don't have anyone yelling at you when you make a mistake. It's more fun and nobody takes it seriously." (Edmonton Journal, December 7, 1972, p.45)

And in Aspen Gardens, a community in the greater Edmonton area, youngsters in the 6-10 year old bracket generally agreed that a revised game is much more enjoyable. Writer Terry Jones (1973, p.45) describes the new game as "rather revolutionary unless one grew up in the days when catalogues were used as shin-pads, an apple was the puck, and the river was the rink."

This "revolutionary" game includes the following modifications: teams are composed of seven players, one of whom is a substitute; games are played across the ice or on half a regulation surface; players regularly rotate in their positions; a single "game director" replaces the two coaches who would normally supervise each team; and every player is on the ice for almost the complete game.

The reaction, report the organizers, has been very favourable amongst both players and parents. One parent is quoted as saying "It's great. The kids are playing all the time and they alternate positions. But best of all is that these kids ALL leave the ice feeling like they've won." (Jones, 1973)

Each of the above mentioned suggestions as to how minor hockey could be changed has merit. Some are more realistic than others, but all suggestions should be examined closely in comparison with the present situation. This thesis attempts to compare one such alternative game model with a more traditional one.

Proposed Model for Minor Hockey Environment

This thesis examines the effects of changing two play-related aspects of the game, so the environment will be more in keeping with children's needs and abilities. In the modified model youngsters played on a reduced ice surface measuring approximately 65 feet by 85 feet (i.e. one third the size of a normal surface), and teams were composed of

only six (or seven) players, thereby permitting each player to play for the complete duration of the game.

Such rule changes were based on two fundamental principles: that youngsters should be learning to play the game on a facility which is consistent with their size, maturity and ability, and that fewer team members will result in more ice time - hence more opportunity to learn and enjoy the game.

Rationale for Proposed Changes

Rules for games are established to equalize the opportunity for success among those competing. Rules change from time to time to meet the needs of a game and its players, and generally result in an improved style of play. The rules for hockey have changed considerably since the game was first played in the mid-1800's.

The first game of ice hockey, reported a special historical committee of the Amateur Hockey Association of Canada in 1941, "was played by the Royal Canadian Rifles, an Imperial unit, stationed in Halifax and Kingston in 1855..." (Howell and Howell, 1969, p.34) Although the actual origin of the game is still in dispute, its playing rules can be traced with greater accuracy. In the early years

> the number of players was so flexible that it was restricted only by the quantity that turned up to play and also by the thickness

> of the ice. The size of the playing area was sufficiently elastic to suit the width of the river and to accommodate the forty, sixty or even one hundred who wished to play." (Howell and Howell, 1969, p.35)

Between 1855 and 1870 hockey's popularity grew rapidly and by the 1870's games began to move indoors. Since no indoor arena could provide space equal to a river or lake, the number of players per team had to be reduced. In 1875 nine players per team usually took part and in 1884 that number was reduced to seven. (Howell and Howell, 1969, p.74)

Charles L. Coleman reports that the first set of published rules probably appeared as part of a manual put out by Arthur Farrell. Among the rules was the restriction on the players to seven per side, the establishment of a minimum size for an indoor arena at 112 feet by 58 feet, and the elimination of substitutions except in the case of accident or injury. (Coleman, 1964, p.1) The players were goalie, cover point, point, rover and forwards (three).

As one can see, the modified model this thesis utilized is not much different from the original form of the game. The ice surface was smaller then and substitutions were not permitted, presumably because the aim of the game was to allow maximum participation by each player.

By 1934, organized hockey was played almost exclusively indoors and rules were becoming more standardized throughout the country. Foster Hewitt (1934, p.49) quotes

the Canadian Amateur Hockey Association rule book for 1934 as allowing a total of 10 players per team to be in uniform, although only six (a goalie, two defensemen and three forwards) were permitted to play at any one time. Gradually, more substitutes were permitted and today each team is allowed to dress 17 players including two goalies. (CAHA Rule Book, 1977-78)

In his book, Down the Ice, Hewitt also describes how other rules of the game were refined. Nets were put on frames, referees used whistles, intermissions were allowed, offsides were defined and time restrictions were standardized. Hewitt offers the following comment as to why such changes were brought into being:

> ...in the early years rule changing by amateur leaders was inspired by necessity; but with the coming of professional executives, alterations were animated more by the desire to make hockey speedier, more spectacular and crowd-pleasing. (Hewitt,1934, p.31)

The professional game has had a profound effect on the development of the amateur game, despite the fact that each is played for a different reason. Amateurs, including young players, play, presumably, for their own enjoyment while professionals play primarily because they are paid and for the enjoyment of the many spectators who pay to see exciting games. Increasing the team size and allowing frequent substitutions was obviously done to speed up the game and make it more exciting to watch.

Minor hockey programs, on the other hand, supposedly help youngsters learn to enjoy the game and develop their skills, and should therefore set playing rules with these objectives in mind. A professional-type game is not primarily designed to develop skills nor is it for the enjoyment of its participants.

In this regard, Cal Botterill described a scene in Victoria, B. C., and noted how ridiculous playing on a large ice surface can be. He said

> Here in a part of Canada where ice is in unbelievably short supply and as a result players have very little skill, a regular professional-CAHA style game was being played on a large ice surface by teams of eight year old boys who could hardly skate. It was unbelievable to watch a group of 10 boys stumble after a black disc on about one-twentieth of the ice surface while hundreds of other youngsters would love to get on any patch of ice to develop their skills. That this is developing hockey players or happy, healthy youngsters is questionable. (Botterill, 1972, p.59)

It would seem reasonable that a smaller ice surface would allow more opportunity for each boy to touch the puck or score goals because they would be closer to the puck. Orlick (1972) found that touching the puck was one of the most important rewards for young boys, and with more puck touches a player's attitude toward the game was found to be more positive.

MacKay (1973) found that soccer games on a scaled down field resulted in significantly more ball touches per player than on a regulations sized field. A direct parallel could be drawn to hockey. In terms of learning to manipulate the ball or puck, the more chances a child has, the more opportunity for learning. This concept is supported by Vanier and Foster (1959) when they say "Skill is developed largely through trial and error. Children learn largely from their mistakes."

Other sports and other countries have previously concluded that youngsters are not capable of utilizing an adult-sized playing surface and have adapted games accordingly. In China, for example, all facilities and equipment are reduced in size for young athletes. Authorities have gone to great lengths to ensure that children will be encouraged to participate, even at very young ages. Following a visit to that country in 1972, R. A. Clumpner and R. G. Glassford reported that

> Equipment and facilities are poor by North American standards...Of significance, however, is the Chinese technique of scaling down equipment and facility size to suit the age group. Toward this end they produce three different sizes of basketballs, and several sizes of soccer balls; they reduce the dimensions of the soccer pitch and the goal; they lower the basketball backboards to as low as 1.75 metres and the size of the ping-pong table to suit five year old participants. (1973, p.20)

Similar changes are made for youngsters in British soccer programs, where facilities are designed for the average player, not for the school or community team which perhaps need the larger fields. The Department of Education in England recommends that "even at the top of junior high school, children do not need large pitches (soccer), and, if left to themselves, many of them seem content with, and even prefer, small sides..." (Department of Education, 1962, p.17)

Stuart Robbins makes a more specific recommendation for soccer in saying

> Researchers, using body size norm charts for various ages and the mature adult, concluded that the eight year old should be playing on a field 60 yards by 40 yards with goals six feet high and six yards wide. (Robbins, 1977, p.8)

In Canada, very few national sports bodies officially promote a modified game for their young participants. One of the few is the Canadian Amateur Basketball Association which has adopted the international game of "mini-basketball". In this game players shoot for an eight foot high hoop, as opposed to the regular 10 foot one, use a smaller ball and have a shorter free throw distance. (C.A.B.A. 1977)

Similarly, the Little League baseball organization which is based in the United States has stated its playing facility sizes "are based on the formula that Little League distances should be two-thirds of the major league specification." (Hale, 1973)

In an article appropriately entitled "The 20 Foot High Basketball Hoop" noted Canadian physical educator R. G. Glassford asks adults involved in minor sport to place themselves in the shoes of the youngsters they guide and see a facility twice its normal size. By doing so he says an adult can better understand how youngsters feel playing on adult-sized rinks, fields, etc. Glassford calls for an examination of the programs currently being offered when he says

> Research into the analysis of children's movement and skill aquisition clearly points out that youngsters cannot achieve quality movement until their movement ceases to be controlled by their environment, and the environment in turn begins to be controlled by them. In order to facilitate this development, it is mandatory that physical educators examine much more carefully the kinds of equipment and facilities which they provide for youngsters. (Glassford, 1973, p.6)

More specific to the sport of hockey, he also adds that "Professionals and leaders in the sport of ice-hockey have still failed to realize the importance of scaling down equipment and facilities to suit the needs and capabilities of children." (Glassford, 1973, p.7)

Similarly, there is considerable evidence in support of reducing the size of the teams on which youngsters play.

As discussed above, the introduction of line-changing into hockey came as a result of an attempt by professionals to make the game speedier and more exciting to watch. Since minor hockey games are not primarily for

spectators, it would seem logical that line changes, which result in a loss of playing time, should be kept to a minimum in order to allow maximum opportunity for the player to improve his skills.

With increased playing time, young players are likely to enjoy the game more and improve their skills which, together, results in a more rewarding hockey experience. Without lines to change, coaches would no longer have a great deal of influence over the playing time of each boy, eliminating the temptation to play only the better players in an attempt to win.

British soccer-football officials endorse the concept of having youngsters play on smaller teams because, they feel, it is natural for them to want it that way. Authors of a Department of Education publication note that "when they organize themselves, children seem to prefer small numbers and the average player certainly gets more chances when the teams are small." (Department of Education 1962, p.18)

The mini-basketball rules promote the concept of increased playing time for all players and one rule requires a full change of players at regular intervals. Hockey has no such rule, and many players, particularly the less developed ones, are not given sufficient game experience to improve.

Besides Little League, there is another form of baseball which is fast-becoming popular with youngsters and it is called T-Ball. Consistent with the idea that maximum participation is a primary objective of a minor sports program, T-Ball rules state that teams shall consist of 11 playing members (as opposed to the regular nine), every player shall bat every inning and all substitutes must play at least two of the five innings which make up a complete game.

Other hockey playing nations in the world today utilize a revised form of the game for their youngsters. In Russia and Czechoslovakia teams for those under 10 years of age are organized, but they are involved only in "friendly matches" and no scoring records or standings are kept. (MacDonald, 1973) Perhaps this is one of the reasons these two nations are among the best in the world.

As early as 1958, before Russia had become a major power in world hockey, many Canadians were aware of how far behind Canada was. W. J. L'Heureux (1958, p.31) noted that a Russian team had completed a tour of Canadian cities with a 5-2-1 record and marvelled at their improvement since seriously taking up the game in 1950. How had they been able to reach this level in so short a time?

"The answer is simple", he said. "They have been able to play under rules which foster the development of fundamental hockey skills - not hinder them." L'Heureux

then called for a more strict adherence to the rules, especially for minor hockey teams, in order to re-emphasize skating, puckhandling, passing and shooting. He further stated that the NHL style of "play the man" should be discouraged because of its effect on the other skills of the game.

Educational literature is also supportive of modifications in rules for children's games. The British Ministry of Education recommends to teachers introducing soccer to youngsters that

> the rules should be gradually introduced so that there is a steady growth of the understanding without any sacrifice of the genuine play element without which so much is lost. (Ministry of Education, 1953, p.19)

Many authors (e.g. Vanier and Foster, 1959, and Bucher and Reade, 1971) believe that children up to 10 or 11 years of age have little interest in, or appreciation of, "team play". Their ability to relate to 16 teammates (regulation size team in hockey) would therefore be less than for a team of six or seven under a modified set of rules.

In addition, Bucher and Reade comment that

> All children want to participate, either with a group or another individual. Each wants to be able to contribute something to this individual or the group. Basically, no child wants to stand on the sidelines. (Bucher and Reade, 1971, p.103)

Summary

What is being done in other sports and in other countries has been examined in the formulation of the alternate model and a number of ideas have been incorporated. It would appear that hockey has fallen behind other team sports such as baseball and basketball in the adoption of a set of rules which is designed to suit the needs and abilities of its young players.

In this chapter an attempt has been made to critically analyze the environment for children's sport, and hockey in particular. Well known sport and educational authorities have been shown to recommend modifications in children's games. An alternate game model for hockey has been proposed and rationalized. In the next chapter implementation of the alternate model will be explained.

CHAPTER III

METHODS AND PROCEDURES

Introduction

This was a case study which resulted in the application of both a modified game model (utilizing a smaller ice surface and fewer members per team) and a more conventional one (larger ice surface and greater members per team). The study sought to make comparisons on the basis of skill improvement through a pre-test, post-test analysis.*

A total of 86 boys, 7-9 years of age took part in the study - 28 participating in the modified environment (experimental group) and 58 in a more conventional one. Prior to group assignment and again following a complete season (23 games) skills tests were administered, and results of the study are based on these comparisons.

* NOTE - When first conceived, the study also intended to make a comparison of "enjoyment of the hockey experience" by the two groups. However, due to the age of the subjects (mostly 7 and 8 year olds), it was found that question and answer interviews were inadequate. It was determined that indepth, lengthy interviews were the only means of soliciting meaningful individual responses, and since this was not possible this portion of the study was abandoned. However, 21 subjects were asked a series of 10 questions related to personal enjoyment of the hockey experience. Results were sketchy and inconclusive, especially in light of the small number of subjects interviewed. For information purposes, the results are summarized in Appendix II.

Application of the Model

The study was done in Nashwaaksis, a small community within the City of Fredericton, New Brunswick. The "mite" (7-8 year olds) age group was chosen following consultation with minor hockey organizers.

The modified game structure highlighted two major changes: (a) games were played on a surface measuring 65 feet by 85 feet (1/3 a normal ice surface) and, (b) each team was composed of only 6 or 7 players. Other adjustments were made: teams were not assigned a "coach" (however, an adult was on hand to supervise all sessions), off-side and icing rules were waived, and no referees were used.

The more conventional game structure utilized an ice surface measuring 115 feet by 85 feet (2/3 a normal ice surface). Other than this reduction in ice size, all other aspects of the traditional game model were respected - teams were composed of 14-16 players, each had a coach and/or manager, all CAHA rules (except "offside") applied, coaches changed players at will (usually in "lines") and referees were used.

It should be noted that, when the study was first conceived, it would have utilized ice surfaces measuring 65 feet by 85 feet (modified environment) and 185 feet by 85 feet (conventional environment). However, practical conditions such as the number of players, ice time allotted for this age group, parental and league attitudes, etc. forced

a situation whereby those in the conventional environment played their games on two thirds of a normal ice surface, while the experimental group played on the remaining one third.

Hypotheses

In order to establish a basis for comparison, the study hypothesized that no significant changes in skill improvement would result - the null hypothesis.

More specificially, it was hypothesized that:

1. If boys 7-9 years of age play a 23 game hockey schedule, then those playing under a modified environment (experimental group) will not improve their forward skating ability any more or any less than those playing under a more conventional environment (control group).

2. If boys 7-9 years of age play a 23 game hockey schedule, then those playing under a modified environment (experimental group) will not improve their puck handling ability any more or any less than those playing under a more conventional environment (control group).

3. If boys 7-9 years of age play a 23 game hockey schedule, then those playing under a modified environment (experimental group) will not improve their combined forward skating and puck handling abilities any more or any less than those playing under a more conventional environment (control group).

4. If boys 7-9 years of age play a 23 game hockey schedule, then those ranked lowest (lower 50 per cent) on the pre-test and subsequently assigned to the experimental group will not improve their forward skating ability any more or any less than those ranked lowest and subsequently assigned to the control group.

5. If boys 7-9 years of age play a 23 game hockey schedule, then those ranked lowest (lower 50 per cent) on the pre-test and subsequently assigned to the experimental group will not improve their puckhandling ability any more or any less than those ranked lowest and subsequently assigned to the control group.

6. If boys 7-9 years of age play a 23 game hockey schedule, then those ranked lowest (lower 50 per cent) on the pre-test and subsequently assigned to the experimental group will not improve their combined forward skating and puckhandling abilities any more or any less than those ranked lowest and subsequently assigned to the control group.

7. If boys 7-9 years of age play a 23 game hockey schedule, then those ranked higest (upper 50 per cent) on the pre-test and subsequently assigned to the experimental group will not improve their forward skating ability any more or any less than those ranked lowest and subsequently assigned to the control group.

8. If boys 7-9 years of age play a 23 game hockey schedule, then those ranked highest (upper 50 per cent) on the pre-test and subsequently assigned to the experimental group will not improve their puckhandling ability any more or any less than those ranked lowest and subsequently assigned to the control group.

9. If boys 7-9 years of age play a 23 game hockey schedule, then those ranked highest (upper 50 per cent) on the pre-test and subsequently assigned to the experimental group will not improve their combined forward skating and puckhandling abilities any more or any less than those ranked lowest and subsequently assigned to the control group.

Instrumentation

Through a review of literature, it was determined that, for boys aged 7-10 years, the most important hockey fundamentals were skating and puck handling. (Meagher, 1972, Watt, 1971, L'Heureux, 1958, and others.) Other skills such as shooting, passing, checking and team play are certainly important, but not as important for this age group.

Therefore, in selecting tests for comparison of the two groups, it was necessary to choose those which would adequately assess skating and puck handling abilities of the young player. A review of the pertinent literature revealed that few validated skills tests for ice hockey have been devised.

In 1935 Brown developed three skills tests for women including speed skating, goal shooting and dribbling, but no statistical analysis was provided. Doroschuk and Marcotte developed an agility test which they felt could serve as a test for screening players. Six tests were developed by Merrifield and Walford (1969) to measure forward skating speed, backward skating speed, skating agility, puck handling, passing and shooting. Only the first four were determined to be reliable, and validity co-efficients ranged from .75 to .96.

Merrifield and Walford (1971) applied their 1969 tests to 94 boys 8 to 11 years of age. All test re-test reliabilities were significant beyond the .01 level, as were all but one of the validity co-efficients. The tests were validated by comparing coach-ratings with test results.

It was therefore decided that one or more of the Merrifield and Walford skill tests would be used to compare the pre-test and post-test skill levels of the boys involved in this study. Because forward skating and puck handling have been judged to be fair indicators of ability, and because beginning players of this age can do little else, it was decided that these two Merrifield and Walford tests would be the only ones used in the study.

The forward skating test was designed to measure a player's ability to skate 120 feet straight forward as fast as possible. This test was used to measure this study's

hypotheses related to skating ability. It was recognized that general skating ability could not be judged solely on results from this forward skating test. However, it was felt boys of this age could do little else (e.g. skate backward). Therefore this test was judged to be a good indicator of ability for this age group.

In the puck carrying test, players were asked to skate, while pushing a puck ahead of them with their sticks, through a prescribed course which used seven stationary objects as markers. Obviously, the test was designed to measure this study's hypotheses related to puck handling.

The test procedures used by Merrifield and Walford were also used for this study. More specific descriptions of the tests, with diagrams, are included in Appendix I.

Research Design

The study took the form of a natural experiment in which a slight variation of a "block" or "matched group" design (Edwards, 1968, p.164) was used. Subjects were assigned to groups and teams on the basis of combined pre-test scores, such that groups were homogeneous on combined skating and puckhandling abilities.

Because the control group required more subjects than the experimental group, the blocks had unequal N's.

A standard test-retest design was used to define improvement on three dependant variables - skating ability, puckhandling ability and combined ability. The independant variables were ice and team size.

Despite the fact that this was a natural experiment, there was reasonably good control of the research variables. Because of the need to equalize teams, assignment to blocks was controlled, but there was equal opportunity for an individual to be assigned to either group.

Subjects and Samplings

The subjects used in this study were those boys aged 7-9 years who turned out for "mite" hockey. In all, 86 boys took part in the program. Of this number, 45 participated in both the pre-test and post-test. Of the 41 who participated, but whose data was not used, it should be noted that the majority of these subjects did not drop out of the program or study. In fact 26 participated in the study but were not present for all or part of the pre- or post- test. Due to closure of the rink, only one day was available for the post-test and many were unable to attend.

Based on the combined pre-test results for skating and puck handling, boys were assigned (by age and ability) equally to all eight teams - four in the experimental group and four in the control group. Following the pre-test subjects were rank ordered according to combined score.

Assignment to teams followed the pattern outlined below in order to assure homogeneous groups:

SUBJECT	TEAM	SUBJECT	TEAM	SUBJECT	TEAM
1	E1	13	E4	25	E1
2	C1	14	C1	26	C1
3	C2	15	C2	27	C2
4	E2	16	E3	etc.	
5	C3	17	C3		
6	C4	18	C4		
7	E3	19	E2		
8	C4	20	C4		
9	C3	21	C3		
10	E4	22	E1		
11	C2	23	C2		
12	C1	24	C1		

(Note: E=experimental group; C=control group; 1,2,3 and 4=teams)

A t-test was done to determine if the two test groups differed in ability prior to the study. The result is shown in Table 1 below indicates the two groups were about equal.

TABLE I

Pre-Test Comparison of Means

Tests	Control (N=32)	Experimental (N=13)	t-Score
Skating	9.41 sec.	9.96 sec.	.171
Puckhandling	62.53 sec.	68.93 sec.	.609
Total	71.94 sec.	78.89 sec.	.624

Procedures

Following is a summary of major procedural events which took place during the study, including those which led to actual implementation:

(a) A letter was written to the executive of the Nashwaaksis Minor Hockey Association explaining the purpose of the study, the steps necessary, and asking for co-operation. (See Appendix III)

(b) A meeting was held between the author and NMHA executive where the decision was made to utilize the 7-9 year old age group for the study, even though the 9 and 10 year old age group was initially requested. (It should be noted that one of the major reasons for not allowing the older age division to be used was a fear that parents of the boys assigned to the experimental group would feel that their boys were being given a sub-standard program).

(c) A meeting was then held between the author and those adults (coaches, managers, parents) involved in organizing the program. The study was explained, and decisions were made with respect to scheduling, coaching assignments, rules, etc. It was at this time that a major change in one of the study's key factors (i.e. ice size) took place. Mainly due to limited ice time, it was decided that the control group would play on a surface two thirds of the regular or full size surface.

(d) Three registration and general practice sessions took place during one full week in late October. During the practice sessions, coaches organized simple drills to expose players to a variety of skills, mostly skating and puck handling.

(e) The pre-test sessions were held, at which time 86 players completed the skating and puck handling tests, according to the Merrifield-Walford format. For the forward skating test, each player was permitted two trials at the 120 foot distance. All players carried hockey sticks. For the puck handling test, each player was permitted only one trial (a difference from the Merrifield-Walford test) due to the length of the test item, and the short time available to the group. Each player skated through the course (see description in Appendix I) pushing a puck with his stick.

(f) Based on pre-test results, assignments to teams were made. In addition, a letter of instruction was sent to all coaches/supervisors/adults involved in the program, and a letter explaining the study was sent to all parents.

(g) All teams played 21 games during the season, plus an eight team double elimination playoff schedule.

(h) The post-test was conducted, and 58 boys took part - 15 from the experimental group and 43 from the control group. The two tests were conducted as in the pre-test.

Limitations and Delimitations

The study could have been limited by the following:

(1) The organizational structure under which the study took place, requiring certain practical considerations beyond the scope or control of a more scientific study. For example, having the experimental group play games directly beside the control group and at the same time may have weakened the treatment effect on the experimental group.

(2) The influence and ability of coaches/supervisors.

(3) Related hockey experiences (e.g. skating) outside the study.

(4) The equipment used by the boys, especially skates and sticks.

(5) The actual number of games each boy participated in.

(6) The number of boys able to complete the post-test.

The study was delimited to the following:

(1) The number and age (7-9 years) of the boys who participated in the program.

(2) The ice surface used.

(3) The instructions to, and techniques of, those supervising the tests.

(4) The test conditions.

(5) The instructions to coaches/supervisors assigned to each team.

Data Analysis

For the purpose of making comparisons between the two groups a two tailed t-test was judged to be appropriate. All hypotheses were stated in null form and the level of significance was set at .05. The procedure followed by Edwards (1968, p.164) was used to compare the means of the two groups.

Summary

This chapter has presented the methods and procedures used in conducting this study, including the actual implementation steps within an ongoing minor hockey program, as well as test procedures. Special mention should be made of the fact that the study was not meant to be an artificially manipulated experimental research project. Instead it was a controlled natural experiment to study a problem in a field research situation.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

A total of 86 subjects participated in this study of which 28 were assigned to the experimental group and 58 to the control group. Forty-five completed all pre-test and post-test items. T-tests were used to compare the means of the two groups in order to determine the significance of the differences in improvement for the test items.

All hypotheses were presented in null form and a two-tailed test of significance was used with a five percent (.05) level of significance.

Results

None of the tests comparing experimental and control group means showed a significant difference. In fact, none even approached a t-score of 2.016, the level of significance required to reject the null hypothesis.

Table II below summarizes the raw score results which were collected and used as data for the comparison of group means.

TABLE II

Summary of Raw Score Results

Test	Control Group (N=32)	Experimental Group (N=13)
Pre-test Skating	9.41 sec.	9.96 sec.
Pre-test Puckhandling	62.53 sec.	68.94 sec.
Pre-test Combined	71.94 sec.	78.90 sec.
Post-test Skating	8.17 sec.	8.38 sec.
Post-test Puckhandling	37.03 sec.	38.58 sec.
Post-test Combined	45.20 sec.	46.97 sec.

Table III (below) summarizes and analyzes the improvement by raw score, and by percentage, i.e.

$$\left(\frac{\text{Pre-test Score - Post-test Score}}{\text{Pre-test Score}}\right)$$

TABLE III

Summary and Analysis of Improvement

Tests	Control (N=32)	Experimental (N=13)	t-Score
Skating	1.24 sec(11.41%)	1.58 sec(12.68%)	.307
Puckhandling	25.50 sec(34.31%)	30.36 sec(36.66%)	.391
Combined	26.74 sec(31.25%)	31.94 sec(33.52%)	.393

Hypothesis I stated that there would be no significant difference in the forward skating ability of the two groups following the treatment (playing hockey under two different environments).

Table II shows the control group had a mean score of 8.17 seconds on the post-test, compared with 8.30 for the experimental group. Table III shows that this represents an improvement of 1.24 seconds (11.41%) for the control group and 1.58 seconds (12.68%) for the experimental group.

When analyzed statistically, this produced a t-score of .307 which was not significant at the .05 level. Therefore, there is no reason to reject the hypothesis.

Hypothesis II stated that there would be no significant difference in the puck handling ability of the two groups following treatment.

Table II shows the control group had a mean score of 37.03 seconds on the post-test, compared with 38.58 for the experimental group. Table III shows that this represents an improvement of 25.50 seconds (34.31%) for the control group and 30.36 seconds (36.66%) for the experimental group.

When analyzed statistically, this produced a t-score of .391 which was not significant at the .05 level. Therefore, there is no reason to reject the hypothesis.

Hypothesis III stated that there would be no significant difference in the combined ability (skating plus puck-handling) of the two groups following the treatment.

Table II shows the control group had a mean score of 45.20 seconds on the post-test, compared with 46.97 for the experimental group. Table III shows that this represents an improvement of 26.74 seconds (31.25%) for the control group and 31.94 seconds (33.52%) for the experimental group.

When analyzed statistically, this produced a t-score of .393 which was not significant at the .05 level. Therefore, there is no reason to reject the hypothesis.

As was the case in comparing the means for the total group, tests used to compare the improvement scores of the upper and lower 50 per cent of each group did not show any significant differences.

Table IV below summarizes and analyzes the improvement scores for the lower 50 per cent of each group.

TABLE IV

Summary and Analysis of Improvement For Lower 50 Per Cent of Each Group

Tests	Control (N=16)	Experimental (N=7)	t-Score
Skating	1.97%	1.91%	- .028
Puckhandling	19.83%	25.38%	1.091
Total	17.38%	22.45%	.582

Hypothesis IV stated that there would be no significant difference in the skating ability of the lower 50 per cent of each group following treatment.

Table IV shows that the control group had a mean improvement score of 1.97% while the experimental group's mean improvement score was 1.91%. When analyzed statistically this produced a t-score of -.028 which was not significant at the .05 level. Therefore there is no reason to reject the null hypothesis.

Hypothesis V stated that there would be no significant difference in the puckhandling ability of the lower 50 per cent of each group following treatment.

Table IV shows that the control group had a mean improvement score of 19.83% while the experimental group's mean improvement score was 25.38%. When analyzed statistically this produced a t-score of 1.091 which was not significant at the .05 level. Therefore there is no reason to reject the null hypothesis.

Hypothesis VI stated that there would be no significant difference in the combined skating and puckhandling abilities of the lower 50 per cent of each group following treatment.

Table IV shows that the control group had a mean improvement score of 17.38% while the experimental group's mean improvement score was 22.45%. When analyzed statistically this produced a t-score of .582 which was not significant at the .05 level. Therefore there is no reason to reject the null hypothesis.

Table V below summarizes and analyzes the improvement scores for the upper 50 per cent of each group.

TABLE V

Summary and Analysis of Improvement
For Upper 50 Per Cent of Each Group

Tests	Control (N=16)	Experimental (N=6)	t-Score
Skating	20.84%	25.26%	1.073
Puckhandling	48.79%	49.81%	.171
Total	45.12%	46.44%	.224

Hypothesis VIII stated that there would be no significant difference in the skating ability of the lower 50 per cent of each group following treatment.

Table V shows that the control group had a mean improvement score of 20.84% while the experimental group's mean improvement score was 25.26%. When analyzed statistically this produced a t-score of 1.073 which was not significant at the .05 level. Therefore there is no reason to reject the null hypothesis.

Hypothesis XIII stated that there would be no significant difference in the puckhandling ability of the lower 50 per cent of each group following treatment.

Table V shows that the control group had a mean improvement score of 48.79% while the experimental group's mean improvement score was 49.81%. When analyzed statistically this produced a t-score of .171 which was not significant at the .05 level. Therefore there is no reason to reject the null hypothesis.

Hypothesis IX stated that there would be no significant difference in the combined skating and puckhandling abilities of the lower 50 per cent of each group following treatment.

Table V shows that the control group had a mean improvement score of 45.12% while the experimental group's mean improvement score was 46.44%. When analyzed statistically this produced a t-score of .224 which was not significant at the .05 level. Therefore there is no reason to reject the null hypothesis.

Discussion

As mentioned above, doing a t-test on the percentage improvement scores for the total group showed no significant difference in the means for skating or puckhandling, or in the total mean.

However it is worthy of note that the experimental group, playing under modified (scaled down) conditions, did show slightly greater improvement scores, even though not statistically significant.

Interpreted, this could mean that playing hockey under a modified (scaled down) environment will result in improvements in skating and puckhandling equal to, or slightly more than, those obtained while playing under a conventional environment.

Likewise, the t-test comparison of mean percentage improvement scores (on all three tests) for both upper and lower 50 per cent groups did not produce any significant differences.

Again the experimental group showed a greater improvement on all tests but one, that being the comparison of skating ability of the lower 50 per cent of each group. In that test the control group showed a very slight improvement (.06 per cent).

Examination of the comparisons between the upper and lower 50 per cent reveals two interesting points: (a) the players in the upper 50 per cent recorded much greater improvement scores than those in the lower 50 per cent, in both groups; and (b) the experimental group showed its most significant improvements over the control group when puck-handling for the lower 50 per cent and skating for the upper 50 per cent are compared.

Interpreted, the first point means that the better players (after the pre-test) improved more than the poorer ones - regardless of environment. The second point would lead one to believe that the puckhandling ability of poorer players and skating ability of better players improves more (although not significantly so) under a modified environment.

Assuming that skill improvement is a primary objective for a hockey program for this age group, it is therefore justifiable that either modified or conventional environments be used. Many critics of scaled-down

environments have claimed that boys would not improve as much as in a conventional environment. This study appears to refute that argument.

While further study would be required for verification, it seems reasonable that utilization of a truly conventional environment (complete ice surface, and teams of 17-19 players) would have resulted in even less improvement for the control group. Under such a system each player would have been on the ice one third of the total time per game, as opposed to one-half time as was the actual case in this study. If true, this would lend support to the argument that using a truly conventional environment will result in even poorer improvement scores.

However, from the point of view of efficient and economical use of ice time available, the modified environment would appear to be the better system. This statement is made because:

a) If the ice is divided into three sections, a total of 42 boys (7 players/team x 2 teams x 3 ice surfaces) can benefit from the ice time available. This is in comparison to 32 to 36 boys (16 to 18 players/team x 2 teams) who benefit from a conventional environment.

b) For each session all boys would be permitted to play for the complete time period, presumably resulting in more opportunities to touch the puck, score goals, and generally be directly involved in the game. This statement

is made based on the assumption that Mackay's findings (1973) for soccer would likely be the same for hockey as well.

c) Over a whole season more boys would experience more ice time, which would likely result in a skill improvement even greater than was shown with this study. Obviously, with more games there would be more opportunities to touch the puck, score goals, skate, handle the puck, etc.

d) When volunteers are so difficult to obtain, a modified environment would not require referees or linesmen, or possibly coaches for each team, therefore making administration easier.

e) The smaller ice surface is more in keeping with the facility size recommended (see Chaper II) by recognized experts and critics, and based on children's needs.

Aside from the statistical results, and the conclusions which might be drawn from them, this study brought to light a number of other findings worthy of note:

1. Organizers, parents, coaches, etc. involved in minor hockey are generally skeptical of any modifications and a "selling job" would appear to be an important factor in the success of a program of this nature.

2. Although the boys themselves enjoyed themselves equally well (see Appendix II), some playing under the modified system felt slighted when they compared their

program to the more conventional one. This could have been due to factors such as: (a) the two games were being played on the same ice at the same time; (b) boys' and their parents' opinions naturally favored the conventional system because they had never seen anything else; (c) coaches of the conventional teams violated a league policy and obtained team sweaters - a cause for jealousy; or (d) a year-end playoff, utilizing a full ice surface and involving all teams, resulted in domination by two teams which played under the conventional system.

3. In day-to-day operation, probably the biggest single problem came when one, two or even more players were missing from a team playing under the modified environment. The imbalance was rectified by temporarily balancing teams, but this was seen by parents, players and others as a loss of the "team" and "real game" concepts. Even though a regular game was then played, this was viewed negatively - especially when a games on two-thirds ice was proceeding normally at the same time.

4. A few parents expressed, in a post-season questionnaire, the view that all teams should have an assigned coach, a person each boy could identify with, get to know, or even call on the telephone to ask about changes in schedules, etc. Under conditions of this study, for the modified system, game supervisors took the place of team coaches. This appears to be a valid suggestion.

5. Several complaints were received by league organizers that coaches in the conventional system were not providing equal ice time for all players - a recurring complaint under this system. Such was not the case with the modified system.

6. Due to limitations placed by the organizers, testing time was limited to four days, two for pre-testing and two for post-testing. Because of this several boys (25) who did the pre-test only partially completed the post-test making it impossible to use their data.

7. It is apparent, based on written feedback from parents, organizers and coaches, and on verbal feedback from a sample of players, that a modified game environment can be readily implemented for boys of this age group. As well, it is felt that the modifications implemented for this study could also be appropriate for older age levels, (i.e. up to age 12), especially for house leagues.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The main purpose of this study was to determine the relative effects on young boys of playing hockey under conventional and modified conditions over a full season. As well, practical considerations in implementing a modified hockey system within a community were examined.

Nine hypotheses were presented, all in null form. It was hypothesized that there would be no significant differences in skill test scores between control (conventional system) and experimental (modified system) groups following a complete season of play. Comparisons were made using three tests, for each group as a whole, and for both the upper and lower 50 per cent of each group.

A total of 86 subjects participated in the study, 45 of whom completed all tests and contributed data. The experimental group was made up of 28 players, 13 of whom were completely tested, while the control group had 58 players, 32 of whom were completly tested.

Comparison was based on test results for forward skating and puckhandling abilities. In addition, question and answer interviews were conducted with 21 subjects, 15 from the control group and six from the experimental group. While the results of these interviews were not analyzed, they are included for information purposes in Appendix II.

The t-test was used to compare mean improvement scores for skating, puckhandling and the combined total. The results indicate a slightly better improvement for the experimental group on all three tests, but the differences in means were not significant.

In a general sense, the study also determined that a modified hockey environment for boys of this age group could be easily implemented in terms of modifications to rules, ice surfaces, scheduling, etc.

Conclusions

On the basis of the results obtained from testing, within the limitations of this study, the following conclusions can be drawn:

1. There was no significant difference in mean skill improvement for boys playing a season under a modified environment than for boys playing under a more conventional environment.

2. There was no significant difference in mean skill improvement for the better (defined as being in the upper 50 per cent following pre-test) or poorer (lower 50 per cent) players.

3. It would appear that a modified environment could and should be used for boys of this age group particularly in communities where ice availability is a problem. This conclusion is based on: (a) feedback from coaches, organizers and, to some extent, the boys themselves, (b) a critical analysis of the conventional hockey environment by

several well-known and respected critics and authors. (c) the fact that skill improvement is certainly not hampered under a modified system, and (d) more boys are able to play for longer periods of time. Critics feel strongly that childrens' physical, psychological and social needs are better met using a modified system.

4. A critical analysis of the existing, conventional game environment revealed that most experts and feel minor hockey is patterned far too closely after the adult or professional model and should be modified in many ways (including ice and team size) to better meet the physical, social and psychological needs of children.

Recommendations for Further Study

To assist others who might be interested in pursuing the subject of modifications for children's sport, or hockey in particular, the following recommendations are made:

1. A similar study should be conducted for older age groups (9-10 years and 11-12 years) although the following changes in the study format should be made and skills testing should be expanded:

   a) Subjects should be given the opportunity to have at least one and not more than three practice trials for all test items, especially puckhandling.
   b) A "coach" should be assigned to all teams, including those in the experimental group.
   c) A better attempt should be made to familiarize parents, coaches, etc. with the purposes of the study (e.g. parent meetings, newsletter, etc.)

d) A minimum of seven, but preferably eight players should be assigned to all experimental teams.

2. A study should be conducted into the effects of not having a traditional hockey program at all for beginners, instead replacing it with a specially designed beginners' program which would focus on skill development and enjoyment for all.

3. A study should be done which would address itself to the whole problem of examining adult (parent) attitudes toward minor sport programs, and modifying those attitudes in a positive way.

4. A study should be done to determine the effects, other than on skill improvement, of modifying a hockey environment (e.g. an in-depth examination of coach, parent and/or player attitudes, a comparison of positive and negative reinforcement factors such as puck touches, goals scored, or ice time, or an examination of the practical features such as economics, cost-benefit analysis, etc.)

5. Similar studies should be carried out using other sports (e.g. football, tennis, volleyball, etc.) and the effect of environment on children's performance.

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APPENDIX I

DESCRIPTION OF TESTS

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Forward Skating Speed. Two parallel lines 120 ft. apart were painted on new-surfaced ice. The line nearer to the end of the skating rink was designed as the starting line. The skater stood facing the finish line with both feet behind the starting line. At the signal the subject skated in a straight line for the finish line.

Puck Carry. Seven obstacles were placed on the ice in a straight line 30 ft. apart. The first obstacle was situated at the 4 ft. start-finish line.

The test included maneuvers of skating to the left, to the right, and performing a loop around obstacles while stickhandling a puck. The skater stood behind the start-finish line with the puck resting on the line to the left of the obstacle. When the signal was given the skater moved through the zig-zag course passing to the left of the first obstacle, to the right of the second obstacle, etc., and skated around the farthest obstacle. The performer was required to maintain control over the puck throughout the test. (Merrifield and Welford, 1971, p.146)

APPENDIX II

INTERVIEW QUESTIONS AND RESPONSES

APPENDIX II

INTERVIEW QUESTIONS AND RESPONSES

The following questions were asked of 21 subjects (six who played under the modified system and 15 who played under the conventional system). Their answers are recorded on the next 13 pages.

QUESTION # 1: Did you enjoy playing hockey this year? (see note below)

QUESTION # 2: What was it like to have six (or 15) players on your team?

QUESTION # 3: Did you like playing on the smaller (or larger) size ice? Why?

QUESTION # 4: Do you like it when you got the puck? Did you get the puck a lot this year? Why?

QUESTION # 5: Do you like to play a lot during your games?

QUESTION # 6: Did you get on the ice as much as you liked during these games?

QUESTION # 7: What did you like best about playing?

QUESTION # 8: What didn't you like about playing this year?

QUESTION # 9: If you were making up your own rules for hockey, which ones would you change?

QUESTION #10: Do you think you will play again next year? Would you like to play on small ice or big ice?

NOTE: In response to the Question #1 <u>all</u> subjects responded in the affirmative.

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Modified Subject # 1	I didn't like it because the other team (conventional) beat us during the playoffs. During the year it was OK.	Yes	Yes, but not really.	Sometimes I got tired, but that's better than taking your turn.	Yes.
Subject # 2	When only three or four players showed up we just had scrimmages. We divided up the two teams. But that was OK.	I would like to play on big ice because there is more space. Yes, I like playing on small ice because you didn't have to skate too far to get to the other net.	Yes, I liked it when I got the puck. I got over 30 goals. I was in the right place I guess.	Yes, I enjoyed playing the whole time. (When reminded that the conventional system requried line changes, and was asked if that was good, he replied) no that's not good. They don't get on as much and won't be skating as good as us.	Yes

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Subject # 3	It was OK but some were not there every week. I liked it, but when the teams weren't even it wasn't fair.	I would like to play on the big ice because you get more room to skate.	Yes. But I didn't get it a whole lot.	Yes.	Yes, I like to play the whole game.
Subject # 4	You could play a lot better.	I'd play on either one (small ice or big ice).	Yes. Yes.	Yes.	Yes, I only missed two games.
Subject # 5	Good.	I liked it. It's more easier because you don't have to skate all the way up the ice.	Yes. Yes.	Yes.	Yes. (When asked if he would prefer substitutions he said) I'd rather play the whole game like I did this year.
Subject # 6	It was OK, I liked having six men on our team.	Yes. You don't have to skate so far.	Yes. Yes.	Yes.	Yes.

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Conventional					
Subject # 7	Yes I liked it.	I like to play on the big ice because there is more room to skate.	Yes. Yes - because everyone passes it to me.	Yes	Yes.
Subject # 8	Yes	Yes. I don't know.	Yes. Yes I got it quite a bit.	Yes.	Sort of... sometimes I did depending on how many kids were there.
Subject # 9	I had fun.	No because you didn't have to skate so much. I liked it a little,but I like full ice better	Yes. All the guys passed it to me.	I like being on the ice the whole game because I don't get tired. (When asked if he had a choice of playing modified or conventional he said) I'd rather take my turn and play on big ice.	Yes.

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Subject #10	It was sort of fun. We didn't lose many games.	Yes, because when you have more room it's more fun.	Yes. I got it quite a lot- but not a whole lot. I play defence and its usually up in the other team's end.	Yes	Yes
Subject #11	It wasn't so crowded because there was more room to skate.	Yes, you didn't have to skate too far up and down. There was more room to practice.	Yes. Pretty much.	Yes	Yes
Subject #12	You win more with 15.	I got on the ice a lot.	Yes. I got three goals.	Yes	Yes
Subject #13	It's better than staying on the ice all the time (Why?)Because my skates are heavy.	Yes, there was more room for breakaways.	Yes	Sometimes.	Yes

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Subject #14	OK	Big ice (185 x85) lets you have more room.	Yes. Yes I liked it more this year than last year.	Yes	I wish I would have played more. It's fun and I like to get goals. I didn't get any this year.
Subject #15	Yes it was fun but you have to wait 10 minutes to get out of the box. You can tighten your skates.	Yes	Yes	Yes	Yes
Subject #16	It took longer. You get more of a rest.	Yes. There is more room to skate and go past the other men.	Yes I got it more than last year.	Yes	Yes, but I'd like to be on a little bit more. I wouldn't like to play across the ice because there's no room.

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Subject #17	It was good.	On a break-away you have more room. I like the big ice better.	Yes. Yes.	Yes	Yes. I would like to play more if I could. I would rather play on the big ice (even though substitutes are necessary)
Subject #18	It was good.	Yes. You could skate around a lot.	Yes. No not that much. The guys who can skate real good got the puck more.	Yes	Yes (hesitant)
Subject #19	Yes I liked it.	Yes	Yes. Yes I improved a little.	Yes. No I wouldn't like to play on small ice because you have only a few guys and it doesn't look like you have a real team.	Yes I got on enough.

Questionnaire Responses

Subject	Question #2	Question #3	Question #4	Question #5	Question #6
Subject #20	Yes it was pretty good.	Yes. I like the whole ice more because there's more room to skate around. When you get tired you can go off.	Yes. Yes.	Yes	Yes
Subject #21	Yes I liked it.	Yes because you get a lot of goals	Yes. No (No explanation)	Yes	Yes

Questionnaire Responses

Subject	Question #7	Question #8	Question #9	Question #10
Modified Subject # 1	You get the puck a lot.	The crowds around the net.	No answer.	No, I didn't go much and my father said he wouldn't send me. If I did I would like to play on little ice.
Subject # 2	Playing center and getting goals.	When we lost. When someone gets hurt, and when someone trips me.	You should put some good guys on each time to make it equal. If some guys weren't here I'd call and tell them when to come	I'd like to play on big ice like we did last year. It wasn't any good this year. I'd like to play whole ice sometimes and small ice sometimes.
Subject # 3	Stick-handling the puck.	Not everyone got sweaters	I'd divide the ice right in half. We'd get more room to skate and they'd get just as much	Yes in the Mite league. On big ice because there's more room to skate. I wouldn't mind (not playing for a whole game.)

Questionnaire Responses

Subject	Question #7	Question #8	Question #9	Question #10
Subject # 4	Just getting the puck.	Nothing.	I might....	Yes. I would like to play on the Canuks again (as opposed to larger ice)
Subject # 5	Getting the puck and skating and scoring.	Not getting the puck and when people push me.	No	Yes, my mother takes me. When I get bigger I'd like to play on the big ice, but when I'm small I don't want to play on the big ice. I like to have six players on my team.
Subject # 6	Getting goals.	When they don't allow your goals. When they play rough.	No answer.	Yes, on big ice.
Subject # 7	Scoring goals and stick-handling on a breakaway	Tripping with your stick.	There shouldn't be tripping or cross checking or lifting your stick.	Yes, I'd rather play on big ice and take your turn.

Questionnaire Responses

Subject	Question #7	Question #8	Question #9	Question #10
Conventional				
Subject # 8	Getting goals and being a defenseman.	When your skates aren't tight enough.	Maybe some changes... no.	Yes, on the big ice with 15 men.
Subject # 9	When I got goals and we won. Being with the other guys.	When they beat us.	There should be penalties for tripping and slashing	Yes I'd like to play on the big ice because you know more people that way.
Subject #10	When we won the cup. We only lost two games.	Tripping and all that. When we missed the net.	I'd make some penal-ties and use the whole ice. When the nets are more far ap-art it seems like more fun.	Yes, in Atom. On big ice.
Subject #11	Skating.	I liked everything	I don't think so. Maybe one. I don't know.	Yes, this is my second year. On big ice because you can skate faster and there are new players.

Questionnaire Responses

Subject	Question #7	Question #8	Question #9	Question #10
Subject #12	Skating and shooting the puck.	I didn't like being pushed over the side.	I'd make one defenceman go up and try to get the puck away from them.	Yes, I like the big ice.
Subject #13	When we played full ice (in the playoffs) We played on more ice this year. Last year they divided it in two parts. I like this year better.	Getting penalties.	None	Yes, on big ice.
Subject #14	Yes, my team mates.	The coach would make me go on defense. I like to get the puck a lot.	We should play on full ice for the whole year.	Yes, in Squirt. I'd like to play on big ice.

Questionnaire Responses

Subject	Question #7	Question #8	Question #9	Question #10
Subject #15	Getting goals, getting the puck and shooting.	When we lost	I'd throw the puck up in the air on face offs	Yes. I wouldn't like to play cross ice.
Subject #16	Skating with the puck.	No. I liked everything.	No. I liked it.	Yes. I'd like to play in the NHL.
Subject #16	Scoring goals. I got 6 this year. And checking	Tripping.	I'd tell them not to trip and all that.	Yes. On big ice.
Subject #17	When we win.	Nothing	Everything was OK	Yes, I'll play Mites again. I wouldn't like small ice as much.
Subject #18	Getting goals. I got two this year.	When we lose and when they stop you on a breakaway by tripping.	Yes. There should be no tripping or slashing.	Yes, I'll play Squirts next year. I wouldn't like to play for the whole hour because you get tired. I like the big ice because it's more like a real game.

Questionnaire Responses

Subject	Question #7	Question #8	Question #9	Question #10
Subject #19	I liked everything.	Nothing	None	I don't know. I'd like to.
Subject #20	Skating and scoring. I got three goals and five assists.	I liked it all.	Yes. (No further explanation)	Yes, I think so. On big ice.

APPENDIX III

AN OPEN LETTER TO THE NASHWAAKSIS MINOR HOCKEY ASSOCIATION

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AN OPEN LETTER TO THE NASHWAAKSIS MINOR HOCKEY ASSOCIATION

FROM

JIM MORELL

As several of you are probably aware I am on a year's leave of absence from the provincial Department of Youth working on a Master's degree in sport at the University of Alberta in Edmonton. I will return to my job by September 1st of this year having completed all my course work.

The reason I am writing is to ask the Nashwaaksis Minor Hockey Association for some much-needed assistance in the project I have selected as my thesis. One of the things I have wanted is for my thesis to be of the practical and helpful variety. I have quickly learned that the impractical, less helpful ones are a lot easier to do, but I am still determined to give my ideas a try, and, as I said, need some help from your association.

Let me explain more about what I would like to do. Much has been said about ways to improve minor hockey and I have discussed this problem with your coaches at the clinics I have done in Nashwaaksis. To say the least, hockey is traditional in nature (except for the odd community) and most people associated with it resist change.

But it is the opinion of many, including myself, that change for the better is possible if there are sufficient and valid reasons for it. Up to now these reasons have been lacking and this is what I would like to provide - an alternative plan for minor hockey, not just change for the sake of changing.

To do this I have come up with a project (my thesis) which will compare the results of the "traditional" minor hockey system with a revised one.

In short, I would like to ask the Nashwaaksis Minor Hockey Association to be the "guinea pigs" for this experiment. Basically the plan involves comparing the effect (on the game) of the size of the ice (half the rink or full ice) and the size of the team (the present 15 or 16 per team or the proposed 6 or 7 per team). Perhaps, and I say this because I am not really sure what the results will show, we would be better off having the younger players play on half the ice and make the teams much smaller so they would play the whole game instead of one third or one half as is now the case.

In order to make these comparisons teams would have to play under these conditions for a certain length of time and the differences would have to be recorded in meaningful terms. To me, there are three ways to evaluate the merits of each system:

1. skill improvement produced
2. attitude toward the game
3. participation by each player

Each of these can be measured and evaluations made on the basis of results. A player's skill can be measured by improvement in such skills as skating, passing and shooting (probably by the Hockey Canada Skill Tests). A player's participation in the game might be measured by the number of times he touches the puck, and this can be done. (The reason for selecting the puck-touches as a measure of participation is because minor hockey dropouts often say the reason for leaving is because they "never got to touch the puck very much".) And finally, enjoyment of and attitude toward the game can be measured by asking players, coaches and parents which aspects of the respective systems they like and dislike. This can be done through interviews and questionnaires.

So that is how one might evaluate the good and not-so-good points of each system. "But what do these 'systems' look like?" you are probably asking.

In order to be able to say whether it was the size of the ice or the size of the team that produced differences in the above measurements (I assume there will be differences), one would have to use all possible combinations of the two. As well, in order to reach any conclusions, the experiment would have to be long enough to warrant saying "It was the system which produced the changes," and this means about three to four months or longer if possible. Here are the conditions under which each group will play:

Group Number	Ice Size	Team Size	Teams Required for League	Player Total
1.	Full	15	4	60
2.	Half	15	4	60
3.	Full	7	4	28
4.	Half	7	4	28
				176

"Why do all this?" one might ask. Well, I think it will provide, once and for all, some answers about what we are accomplishing with our present program and what we might accomplish with revised or adapted ones such as I

have suggested. For instance, we might be able to answer questions like those below (right now we can only speculate):

1. Will cutting down the team size from 15 to 7, allowing each player a full 50 minutes of actual playing time, really make a difference in his ability, participation in and enjoyment of the game?

2. Will cutting down the size of the ice hamper skating but increase puckhandling?

3. Will parents and coaches see changes in the boys' attitudes if they are playing more and not sitting on the bench?

4. Is one of the revised systems better, overall, than our present system of full ice size with 15+ players per team? Should we, therefore, change?

I am hopeful that, if the N.M.H.A. approves, Nashwaaksis will become an official "testing centre" for all Canada. I have talked with officials of Hockey Canada about the project and they support it 100% and, once an official proposal is submitted, will consider recommending it for financial assistance to the C.A.H.A. and the federal government. I have held off submitting a proposal for two reasons: first, I have just finalized, in my own mind, what the project might look like, and second, I want to be able to say "Nashwaaksis will be the location and the N.M.H.A. has given its support."

In summary I am saying this:

1. I am asking the N.M.H.A. to be the first community in Canada to try an "experiment" such as this.

2. A total of 176 (or more) boys between 7 and 9 years old would be required to form the 16 teams, and each would require a volunteer coach.

3. A 3-4 (or more) month period beginning in November of 1973 would be needed with at least one and preferably two games per team per week. (If each team were able to play two games per week a total of 12 hours per week would be required.)

4. All aspects of the program would be under the control of the N.M.H.A. - my only concern is to evaluate the merits of each system.

Perhaps Nashwaaksis does not have 176 boys in that age group. I'm not sure, but I think without "cutting" anyone they could be found. Ice time might be a problem as well so your reactions would be appreciated.

So I guess that is all I have to say for now. I am sure each member of your association will want to consider the proposal carefully so I have had several copies of this letter run off for distribution to executive members and interested persons. As you can probably appreciate, time is of the essence for me so an early reply would be appreciated.

Thank you for your consideration of this request.

Sincerely,

Jim Morell

APPENDIX IV

GUIDELINES FOR COACHES

Nashwaaksis Minor Hockey Association

"MITE" DIVISION

APPENDIX IV

GUIDELINES FOR COACHES

Nashwaaksis Minor Hockey Association

"MITE" DIVISION

General Comments:

1. The main aim of our hockey program, at this level particularly, is to expose boys to a semi-organized form of hockey which allows them to

   a) learn to skate and handle the puck
   b) learn to be part of a team
   c) learn the basic ideas of hockey (i.e. one team vs. another, teamwork, etc.)

2. Boys at this age (7-9) are not capable of relating to the "team" concept as well as the squirts or pee-wees.

3. Boys of this age should learn skating, puckhandling, and some passing or shooting.

4. The experience should be FUN!

5. Attention span of boys is very short.

Implications:

1. Every boy should receive equal opportunity:

   a) playing all positions including goalie
   b) equal ice time
   c) equal instruction to the good and not-so-good

2. Coaches should plan (prior to going on the ice) a brief (15 minutes) skill-learning session prior to each game.

3. Checking should be discouraged by all players.

4. No individual statistics need to be kept.

5. Games should be FUN!

6. Drills should be short and to the point, varied, and usually oriented to the individual not two or more players.

The Skills:

1. Skating - General
   - be sure laces are not too loose
   - keep everyone skating as much as possible (do not use drills which require "waiting" for someone else)
   - balance and agility are basic to speed and should be emphasized
   - during games encourage boys to chase the puck
   - anything one does on skates will help (including falling down and getting up)
   - demonstrations of the "whole" skill aid learning
   - instructional sessions should reflect variety
   - forward (as opposed to backward) skating should be emphasized

   Skating - Drills
   - use the circles and lines; skate on them, hop over them, skate within certain areas
   - hopping is good (one foot, alternate, two feet)
   - go both ways on corners
   - stopping will come naturally if boys are given the opportunity
   - games like "tag" encourage agility
   - relays are competitive and skill-producing
   - bending, stretching, falling, kneeling, touching toes, etc. are all good
   - use a "pylon" course or "follow the leader" to teach agility

2. Puckhandling - General
   - sticks which are too long do more harm than good; on skates, should be cut at the Adam's apple
   - since boys are individually oriented, there should be plenty of opportunity to work individually with a puck (have the boys bring their own if necessary)
   - drills should be very simple
   - most skating drills can become puckhandling drills just by giving everyone a puck
   - emphasize softness, as if puck was an egg and not to be broken

   Puckhandling - Drills
   - stationary; then with eyes closed; don't look down
   - have a few players carry pucks in a confined area (inside a circle, inside the blue line, etc.)
   - "follow the leader" and "pylon" courses are very good
   - any coach using his imagination can come up with several good drills

3. Passing - General
   - should not be emphasized as much as skating and puckhandling
   - boys of this age find it difficult to relate to others in accomplishing the goal (i.e. scoring)
   - during games passing should be encouraged
   - passes should be made with head up

   Passing - Drills
   - stationary, short distances (10-15 feet) apart are best
   - equal emphasis on forehand and backhand
   - allow some movement after a certain degree of skill has been shown
   - passing at targets is good - two lines with target in the middle

4. Shooting - General
   - many boys are too weak to be able to shoot with power but proper mechanics can be taught
   - squeeze the stick harder than in passing
   - emphasize starting shot with puck behind rear skate; also, the weight transfer from rear to front foot
   - slapshots should be discouraged because the boys do not learn shooting mechanics

   Shooting - Drills
   - the best one for this age group is stationary, each with a puck, against the boards at an imaginary target
   - carry puck to net and shoot on goal
   - pass to on-coming player who shoots